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Vocational Education and Training and Transitions into the Labor Market

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Abstract

Stage 6 of the German National Educational Panel Study (NEPS) 6 is devoted to the transition of young people from school to work. Stage 6 focuses in particular on the transition from school to vocational education and training and then to work (for tertiary education, see Chap. 16). In all Western societies, vocational education and training (VET) systems face a number of challenges, including the need to adapt to increasing skill requirements across the economy and to handle the danger of producing an "underclass" of low-skilled youth. This chapter presents the life-course approach for investigating school-leavers' pathways from school into the labor market within NEPS. Several factors shape young people's school-to-work transitions: their motivation and competence endowment, their decisions to apply for specific educational programs, the constraints they face regarding the opportunities for VET programs and the gatekeepers' recruitment behavior, the information and support youths may or may not receive from social networks, and the learning environments they encounter in firms and schools. We outline the basic theories that guide our research concerning these influences and discuss how we take them into account within NEPS Stage 6. Thus, we provide an overview of the study's research potential in the area of VET. For now, it is mainly the Scientific Use Files of Starting Cohort 4 (SC4) that provide ample opportunities for innovative interdisciplinary analyses—including analyses of students from special education schools. As the starting cohorts age, Starting Cohort 3 (SC3) has now also entered NEPS Stage 6 and its data on VET transitions will soon be available as well.

Keywords Vocational education and training (VET) · School-to-work transition Life-course approach · Panel study · Germany

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15.1 Introduction

A national economy's competitiveness and performance is linked inherently to the productivity of its workforce. Changes in labor markets and the world of work imply an increase in the average level of skill and competence requirements as well as fast turnovers in the nature of skills. As many studies have shown, schooling and initial vocational and professional training remain of primary importance for occupational careers and social integration (see Mayer and Solga 2008). The content, duration, and frequency of individuals' skills and competence acquisition phases, however, are under pressure to change in accordance with ongoing transformations of work. Nonetheless, initial training, educational participation, and decisions made in earlier life periods are particularly important, because they influence the resources and opportunities available in later periods of individuals' skills and competence acquisition and work life (Elder and Johnson 2003; Mayer 1991). Therefore, Stage 6 of the National Educational Panel Study (NEPS),

“Vocational Education and Training and Transitions into the Labor Market,” is devoted to educational biographies in youth’s transition from school into the German labor market. Although NEPS produces a German database, most of these research questions are of general relevance for research on school-to-work transitions from a theoretical point of view or a comparative perspective (by combining these detailed data with other national datasets available).

15.2 The German VET System

For a full understanding of the German VET system, it is essential to consider the German “educational schism” (Baethge et al. 2007), that is, the quite unique and enduring institutional division of academic general education versus practical vocational training. Concerning the latter, the so-called dual system of vocational training (apprenticeship in a firm plus partly general and partly occupation-specific theoretical education in vocational schools) has attracted much attention in international debates and research. The dual system has been seen as one of the skill formation systems capable of not only reconciling high wages with high productivity via high skills and high value-added production, but also of integrating less-educated youths into enhancing skill formation processes (Culpepper and Finegold 1999; Culpepper and Thelen 2008; Streeck 1989). However, the ability of the German dual system to adapt to new technological and market conditions is being called into question increasingly regarding, for example, its applicability to the knowledge and service society and its ability to provide general basic competencies or life-long learning (see Baethge et al. 2007).

The dual system has often been portrayed incorrectly as the only form of VET in Germany (e.g., Shackleton 1995). In fact, the German VET system features a number of different tracks or educational pathways. Besides the firm-based dual system, there are school-based VET programs; and both firm and school-based programs lead to nationally recognized occupation-specific VET certificates. The dual system trains youth for manufacturing and industry occupations and some of the white-collar occupations (such as commercial, retail, and administrative occupations), whereas full-time school-based VET programs prepare trainees for personal service occupations (such as nurses, midwives, medium-level care professionals, Kindergarten teachers, and social workers) and medium-level technical occupations (such as the German *Meister* [master craftsmen] or technicians). From these examples, it is clear that firm- and school-based VET programs are not alternative pathways leading to the same occupations, but pathways segmented by occupations. Moreover, this differentiation between firm- and school-based training tracks is gendered: Whereas the dual system trains mainly young men, school-based VET programs are attended primarily by young women (Krüger 2003). The various VET programs are quite diverse in terms of the skill level to be achieved. They range from comparatively simple manual and retail occupations (e.g., bricklayer, painter, or shop assistant) to rather complex white-collar occupations in banking, insurance,

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and IT, or even personal service occupations (e.g., speech therapist or midwife). Training programs are further diversified by the trainees' different levels of prior education: Whereas the majority of trainees in the latter occupations hold a *Realschule* or even *Gymnasium* degree (the *Abitur* that also entitles them to enter university), many trainees in the former occupations hold only a *Hauptschule* degree (Protsch and Solga 2016).

For a long time, the public debate on VET in Germany was dominated by the shortage of available apprenticeship positions that manifested itself as early as in the 1980s, with the debate gaining in momentum in the mid-1990s. Since the early 2010s, however, the debate has changed toward concerns about growing regional and occupational mismatches between the demand for and the supply of apprenticeship places ("*Passungsprobleme*") (Bundesinstitut für Berufsbildung 2017; Milde and Matthes 2016). Increasingly, employers do not find trainees and they leave training places vacant, whereas at the same time, a substantive share of young people remains without a training place.

At the same time, skill requirements in regular VET programs have been upgraded significantly. As a result, those who dropped out of school or graduated with only a lower school certificate are left with fewer training opportunities (Protsch 2014; Solga 2004). Today, these school-leavers often do not manage to enter regular VET programs directly and instead enter the so-called transition system that provides prevocational programs usually lasting one year. These programs, however, neither lead to a regular occupational training credential nor guarantee a trainee's successful transition into fully qualifying (firm or school-based) VET programs (Solga and Menze 2013). The number of young people entering this sector of the VET system depends heavily on the availability of regular training places. The transition system was expanded rapidly in times of shortage of training places and then experienced a decrease until 2014. Since then, numbers are increasing again due to the recent wave of newly arriving refugees who often enter programs in this sector of the VET system (Bundesinstitut für Berufsbildung 2017). At the current stage of research, our knowledge about the efficacy of these prevocational programs and the factors that impact positively on participants' school-to-work transitions has been scarce and often limited to certain regions or types of programs (see Behrendt et al. 2017; Beicht 2009; Geier and Braun 2014; Plicht 2016; Weißeno et al. 2016).

In 2015, about 271,000 school-leavers entered such prevocational programs, compared to about 481,000 young people entering firm-based VET programs (dual system) and about 206,000 starting school-based VET programs (Autorengruppe Bildungsberichterstattung 2016). Taking the 20- to 24-year-old population of Germany, about 12% of them have not completed a regular VET degree—so the German educational system still faces the danger of producing an "underclass" of low-skilled, unqualified youth, even though this share has been declining recently (see Bundesinstitut für Berufsbildung 2017; Gesthuizen et al. 2010; Solga 2008).

The problems of the German VET system also emerge when considering the transitions into the labor market of those young people who have graduated successfully from fully qualifying VET programs. About one-fifth of them enter the labor market in occupations that do not match the ones they were trained for—a trend that has increased

for men (mainly trained in the dual system) since the 1970s. This sort of occupational mobility is related to jobseekers' employment below their level of vocational training, and it is accompanied by periods of unemployment after completing VET (Konietzka 2002). Thus, even for eventually successful VET graduates, school-to-work transitions often take longer, become more uncertain, and involve higher risks in terms of participation in prevocational measures, unemployment, and lower economic returns to education.

The "educational schism" between VET on the one hand and academic training on the other hand is constitutive for the German educational system. However, there are educational programs at the upper secondary level (vocational *Gymnasium*) and postsecondary/ tertiary level (combined higher educational and vocational courses) that dissipate the old schism. Likewise, there are increasingly more legal and actual opportunities for VET graduates to continue to tertiary education programs, overcoming the formerly dead-end track of VET. In NEPS Stage 6, we focus on VET and pre-VET programs, but we collect data on these hybrid and new forms of education as well, enabling the data users to study different pathways in and out of vocational and academic training.

15.3 Research Approaches and Potential of Stage 6

Investigating youth's school-to-work transitions requires a life-course approach. The transition period from school to work is a cumulative—though not always sequential— and highly sensitive phase in an individual's life course. It is shaped by the interplay of institutional regulations, social environments, and individual abilities, competencies, and resources—all of them facilitating or hindering success (see Mayer and Müller 1986). For these reasons, we are interested in educational decision-making processes in constrained situations that differ for various educational and social groups of young adults. Within the school-to-work transition, we need to distinguish, at least analytically, between different, but interrelated status passages. These status passages are: (a) educational decision-making at the end of general schooling (based on occupational preferences and goals formed while at school), (b) transitions from school into the VET system (or into higher education, see Chaps. 14 and 16), (c) pathways through the VET system and completion of VET programs, and (d) entry into the labor market. In all of these status passages, we are interested in the impact of learning environments, individuals' prior educational biographies, competence endowment, and social resources on the patterns, determinants, and outcomes of their transition pathways and skill and competence acquisition.

To gain a full theoretical and empirical understanding, we also have to take into account that school-to-work transitions are not single-agent decisions but socially embedded social interactions that include the outcomes, choices, preferences, values, and experiences of other persons. Furthermore, VET research frequently assumes a steady accumulation of competencies during the transition from school to work regardless of differences in young people's transition pathways. It also tends to overemphasize the

aspect of "choice" (see Leggatt-Cock 2005). With the NEPS data, we are able to take a closer look at the constraining influence of demand-side factors and at the impact of supply-side factors on individuals' educational decision-making processes, access to VET programs, and competence acquisition in young adulthood.

For these status passages, we now specify the main theoretical concepts used in developing the NEPS data collection along with important research questions that can be addressed by analyzing the NEPS data. Both our theoretical concepts and our research questions fit into the general framework of NEPS. We focus on decision making and the shaping of decisions by opportunities and constraints, on competencies both as a precondition and a result of successful VET, and on the learning environments young people may encounter during VET, and we discuss the challenges that arise particularly for young migrants.

15.3.1 Educational Decision-Making at the End of General Schooling

At the end of compulsory education in Grade 9 or 10 (depending on the federal state/*Bundesland*), young people face two related decisions: whether or not to continue school (provided their academic performance entitles them to continue general schooling after reaching the end of compulsory education), and, if leaving school, which type of occupation and VET program to choose (see Dombrowski 2015; Schnitzler and Granato 2016). Decision theories are relevant for both types of decisions. At this point, such theories are much more developed for the decision whether or not to continue school; we know much less about the factors and mechanisms underlying occupational aspirations or decisions and their interplay with the "first" decision on continuing schooling. Moreover, most decision theories lead to competing rather than compensatory hypotheses regarding the crucial factors in individual decision-making behavior. What is more, due to a shortage of data to test these hypotheses simultaneously, we also lack knowledge about the relevance of different decision-making factors for different social groups (in terms of class, gender, ethnicity; see Tjaden and Hunkler 2017; Wicht et al. 2017) and for different decision issues. Within Stage 6, we therefore generate data for different decision theories and the two decision issues mentioned above (see also Chap. 6, this volume).

One of the relevant theories in this context is the rational choice approach (see Breen and Goldthorpe 1997). According to this theory, educational decisions depend on so-called secondary effects, that is, on the economic resources of parents (or other family members), the estimated probabilities of a child's success in completing higher levels of schooling or the VET programs at hand, and expectations of returns to education. The costs of training in different fields are assessed in terms of the effort required and the risk of failure. Status maintenance and risk aversion are the two factors that, taken together, explain class differences in decision making on educational alternatives—also

while controlling for educational performance. NEPS measures educational performance through a variety of different indicators: individuals' school degrees and school grades at the end of schooling as well as their cognitive competencies and personality traits in 9th grade (i.e., at the end of compulsory education).

Social cognitive theory (Bandura 1986) provides a different explanation for youths' educational decisions at this stage in life (see also Chap. 9, this volume). Self-efficacy beliefs—subjective beliefs about what one is able to accomplish—are considered to be more important than "objective" indicators of abilities or competencies such as grades. Social cognitive theory also emphasizes internal rewards: Individuals may choose to continue school or to enter VET programs not only because of their expectation to succeed economically but also because they may find it inherently satisfying to perform certain tasks skillfully (Bandura 1986). Self-efficacy beliefs are not seen as the only determinant of youths' decisions, however. If labor market prospects are perceived as bad, young people may change their educational and occupational preferences in spite of having low self-efficacy beliefs regarding their ability to continue school successfully or high self-efficacy beliefs regarding their occupational (VET) choice. Personal interests are also seen as an important motivational base of educational and occupational choices. For vocational training and occupational choice, Holland (1997) differentiates six domains of interests or occupational orientations: realistic, investigative, artistic, social, enterprising, and conventional (RIASEC). Whether or not individuals may realize these interests is connected closely to their educational decision about continuing general schooling— given the connection of these interests to different occupations, different training institutions (firm/school-based VET programs or study programs at universities), and different requirements regarding prior education. Generally speaking, whereas expectations regarding the return to education play an important role, self-efficacy beliefs are assumed to have the strongest influence on youths' educational and occupational choices.

Decisions about continuing general education or entering the VET system at age 15 or 16 are among the first important decisions in youths' lives in which they have a substantial degree of autonomy from their parents. Yet their preferences are also influenced by their social background as well as by other social and institutional factors. Parents are important not only because they provide financial support or serve as network resources for the VET search (see below), but also because they shape young people's aspirations (Chesters and Smith 2015; Roth 2017). Furthermore, teachers can influence youths' further educational biographies both directly (by awarding grades that either permit or do not permit them to continue higher secondary school) and indirectly (through their opinions about young people's aptitudes for certain occupations and by providing occupation-related information). Finally, young peoples' educational and occupational aspirations are influenced by their peers as well as the broader school and neighborhood context in which they are embedded (Roth 2017; Wicht and Ludwig-Mayerhofer 2014). The rich NEPS data include these factors of youth's decision-making processes at the end of compulsory education. School leavers from upper secondary education (Grades 12/13) face similar challenges. However, their educational pathways and their choice sets are different (see Chap. 14; Risius et al. 2017).

15.3.2 Determinants of Youth's Placement Within the VET System

Youth's success or failure in accessing and being placed within the VET system is an outcome of, on the one hand, their decisions about investment in education and their related application behavior and activities; and, on the other hand, the available opportunities along with the recruitment behavior of VET gatekeepers.

Constraints on access to VET positions in terms of opportunities and recruitment behavior are explained predominantly by referring to microeconomic theories—such as human capital theory (Becker 1964), signaling theory (Spence 1974), and job competition/ vacancy chains (Sørensen 1977; Thurow 1975). Educational attainment is used by employers as an indicator of future productivity and trainability: the lower an individual's educational degree, the lower her or his rank in the applicants' queue and the lower her or his chances of being recruited for a vacant regular VET position (or job). According to this view, an individual's opportunity is defined by the individual's investment in schooling, the supply of more highly educated persons, and the amount of vacant VET positions (typically in the local geographical region). As a result, school leavers' training opportunities are determined to a considerable degree by their relative (as opposed to their absolute) competence endowment and educational certificates (Solga 2005).

Second, gatekeepers in the VET system make recruitment decisions under uncertainty, because it is difficult to observe an individual's productivity and trainability directly. Recruitment tests would increase transaction costs and would run the risk of being considered illegitimate. Hence, employers use individual characteristics such as prior educational attainment, but also gender, ethnicity, age, or disability/overt health status— deemed to be related to learning behavior and competence endowment—as indicators of individual productivity. One common mechanism for doing this is "statistical discrimination," according to which judgments about an individual's potential productivity are based on their group membership in certain social categories and on a probabilistic belief regarding that group's trainability and productivity. Concerning ethnicity, results based on NEPS Starting Cohort 4 have shown that even when school performance is controlled for, young people without a migration background are more likely to enter regular VET programs than young people with a migration history. This lower participation in regular VET programs among migrant youth is caused by both their lower preferences for participation in these programs (self-selection, see below) and the recruitment practices of gatekeepers in the dual system (Beicht and Walden 2017; Tjaden and Hunkler 2017).

There has been a lively theoretical and policy-related debate about the relevance of school certificates, school grades, and cognitive and noncognitive competencies for gatekeepers' decisions, and how strongly formal certificates function as "signals" shaping gatekeepers' assessments of a candidate's competencies in VET recruitment processes (see Kohlrausch and Solga 2012; Protsch and Dieckhoff 2011). Using data from NEPS Starting Cohort 4, Holtmann et al. (2017) were able to show that for low-achieving school leavers, variation in cognitive and noncognitive competencies does not matter for gatekeepers'

recruitment decisions over and above formal school certificates and school grades. Furthermore, the structure of the regional labor and apprenticeship market is important for individuals' chances of entering regular VET programs (Hillmert et al. 2017; Wicht and Nonnenmacher 2017). For example, the regional supply and demand for training places can influence the recruitment criteria of employers (Protsch et al. 2017). To further investigate the role of regional characteristics for placement in the VET system, NEPS data can be supplemented with regional information from other sources such as that on the supply and demand for apprenticeship positions (by occupations), the sectoral structure of regional labor markets, and structural data on training firms (such as firm size and composition of employees).

What factors may explain youths' behavior in seeking and applying for positions in the VET system? Network theorists (e.g., Burt 1997; Elliott and Smith 2004) have shown that an individual's job search is determined significantly by socially stratified recruitment and supply networks. Networks provide information on vacant job positions, give second-hand accounts of employment experiences, and explain job requirements. They may also increase an applicant's reputation, because having employed persons in one's network is valuable (in terms of borrowed social capital). Network resources have been shown to be gendered, and that they contribute to channel women more often into female and men more often into male occupations (Straits 1998). Hence, networks entail structural differences in available contacts, in the base of experiences, as well as in assistance or resistance from others that youth can count on in their VET search (see also Chap. 6, this volume).

However, the role of network resources for VET search behavior and access to VET programs is largely underinvestigated. According to Granovetter (1974), weak ties in particular should provide favorable resources for accessing jobs (or here, apprenticeships). However, as Boxman et al. (1991) and Wegener (1989) have shown, this weakties mechanism applies only to upward mobility, especially among highly qualified individuals. In contrast, resources provided by strong ties could be particularly relevant for low-educated individuals, because strong ties (such as parents, siblings, or best friends) provide more reliable information on applicants' competencies than weak ties. A survey among German firms has shown that small companies in particular rely on "recommendations by others (especially parents and neighbors)" when recruiting low-educated youths for apprenticeships (Seyfried 2006, p. 35). Yet, the study by Holtmann et al. (2017) found that for low-achieving school-leavers, better parental resources improve neither their VET search behavior nor their chance of gaining access to regular VET programs. NEPS offers the opportunity to further investigate the role that different kinds of network resources play with regard to the chances different social groups have of entering VET programs.

Moreover, motivational, cognitive, and personality factors may influence youths' VET search behavior (see also Chap. 9 this volume). Youths' VET search intensity and activities should also be influenced by their motivation to continue their education in VET programs or to withdraw from educational institutions because of a low identification

with educational goals as a result of unfavorable "cooling-out" processes (Clark 1960) and the fear of possible humiliation and further negative reactions (Jones et al. 1984, p. 111). According to social-psychological research on stereotypes and intergroup relations (see Brewer and Brown 1998), prior experiences in school and/or in prevocational programs should therefore affect youths' motivation in their initial and further VET search. Holtmann et al. (2017) show that low-achieving school leavers often withdraw from the apprenticeship market altogether, whereas higher aspirations and better vocational orientation are related to a stronger likelihood among them to both apply and be selected for regular VET programs.

In the matching process, career guidance offices (a department of the Federal Employment Agency) play an important role, especially for students from special education schools or *Hauptschule*. Career guidance officers often channel low-educated applicants into prevocational programs. As a prerequisite for being entitled to enter such programs, the youths in question have to be declared as not yet "mature enough for VET" (*ausbildungsreif*), a procedure that exposes them to processes of (self-)stigmatization that may affect their self-efficacy beliefs and self-concepts. Low-achieving school graduates, therefore, may face a higher risk of withdrawal or self-exclusion from competition over (scarce) regular VET positions. However, this risk might differ in terms of individuals' cognitive and noncognitive competencies (even given equal school certificates). NEPS Stage 6 data offer a unique data source to analyze inter- and intraindividual variation in the VET search behavior of young adults with detailed information on individual competencies, networks, life courses, educational performances, and parental resources. This is especially true for low-achieving students: For the first time, the NEPS data offer a nationally representative sample of former special education students, due to an oversampling of this group sponsored by the Federal Employment Agency.

15.3.3 Successful Completion of VET Programs

School-to-work transitions are not always defined by a single entrance into one VET program, but are often sequences of multiple VET episodes—both completed and uncompleted. Whereas young people's search for and access to subsequent VET positions is structured by the mechanisms elaborated above (Sects. 15.3.1 and 15.3.2), their prior VET biography, their search experiences within the VET system, possible "adaptations" of occupational aspirations (often made involuntarily), and the competencies acquired during previous VET episodes should also affect gatekeepers' perception of their skills on the one hand and their own motivation, search strategies, and resources on the other hand. The finding that individuals "correct" their occupational plans because of success or failure in accessing VET positions indicates the plasticity of how people navigate into and through the VET system (Heinz 2002). We have little knowledge, however, about the determinants of this intraindividual plasticity of educational/occupational goals and of the interindividual differences in the pathways through the VET system and their outcomes. NEPS enables us to fill this knowledge gap.

Young people may leave the VET system with very different outcomes in terms of *certificates*: They may finish a VET episode (a) without a completed recognized certificate (because they enter a short-track program without recognized certificates or have dropped out of fully qualifying VET programs once or several times); (b) with a recognized certificate after having completed one VET program or reentered further programs (with different companies and/or in different occupations); (c) with a recognized certificate after having upgraded their school degree and then (re-)entered programs (e.g., a sizable number of youths reenter school in order to increase their comparative advantage in competition for VET positions); or (d) with multiple certificates for different occupations after having reentered and completed several programs. In prevocational training programs, students do not earn a vocational degree, but they may complete a lower secondary general degree.

We know comparatively little about the factors that influence both the successful acquisition of certificates and the development of competencies. According to constructivist learning theories (e.g., Lanahan et al. 2005), learning is rooted in the learners' activities through which they make use of the opportunities for learning provided by teachers/trainers (i.e., specific learning tasks, learning materials, etc.). NEPS data offer a large set of motivational factors and items on learning environments. For example, how do learning environments have to be designed to trigger trainees' curiosity and challenge their capabilities without discouraging them? Can teachers or trainers enhance learners' motivation (see Chap. 5, this volume)? Given the longitudinal design of NEPS, we are able to investigate the impact of cognitive and noncognitive competencies acquired during school on taking advantage of learning opportunities during the transition from school to work.

In addition, there is no systematic knowledge about how learning settings and their specific properties contribute to the development of cognitive and noncognitive competencies. The same holds true for the effects of prevocational programs. Many researchers argue that these programs improve neither young people's skill level nor their general competencies (Behrendt et al. 2017; Weißeno et al. 2016).

NEPS is keen to provide data to study these issues in more depth. Collecting comprehensive objective information on learning environments in very different VET programs attended by young persons (i.e., information obtained from their teachers and trainers) is not feasible within a large-scale longitudinal survey such as NEPS. We therefore provide subjective information, that is, standardized information from the trainees' perspective. This information includes type of training attended, profile of VET program activities, extent of actual involvement in work processes in the workplace, quality of learning environment, and class composition in vocational school. Given that the German VET system is more diverse than is often assumed, collecting information within NEPS about these basic features of youths' learning environments from a large and representative sample of participants in a wide array of VET programs marks an important step toward a deeper understanding of the impact of learning environments on individuals' success in the VET systems.

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Education as a Lifelong Process (2019), p. 287

Furthermore, it is surprising how little is known about the influence of cognitive competencies and motivational factors on the odds of completing a VET program successfully. It is unknown to which degree social-class-biased assessments (known from school research) occur in VET programs, and what the consequences are in terms of youths' efforts during VET. Although competencies may be the most important determinants of completing a training program successfully (as measured by successful graduation or by the grades obtained in the final examinations), assessments biased by social class, ethnicity, gender, or other factors affecting motivation may also play an important role.

Cognitive competencies are understood and measured as domain-specific and domain-general competencies (see Chap. 4). In an add-on study, we also measured occupation-specific competencies for one specific VET program (commercial office workers) in one specific school year. While results have been encouraging, we shall not be able to introduce measures of occupation-specific competencies for other VET programs in the NEPS data, because the development and the administration of such measures would go beyond the scope of NEPS.

In order to gain some information about the actual content and performance of training programs, we introduced a measure of job tasks (cf. Autor et al. 2003) in VET programs. Using this measure, data users can analyze to which degree VET programs with different learning environments (e.g., small and large firms, more or less encouraging instructors) use youth's cognitive or noncognitive competencies and prepare them for more complex tasks. The "job" task measurement in VET corresponds to the measure of job tasks in later jobs, so the data allow us to assess the development of job tasks from VET to early and mid-life career stages.

Finally, we should emphasize that participation in VET programs is not just related to the acquisition of skills, competencies, or certificates relevant for success in the labor market and at the workplace. It also constitutes an important step toward adulthood. Youths' feelings of not being able to master these challenges can have negative outcomes, including delayed or no family formation, less life satisfaction, less social or political participation, and early unemployment that can cause long-lasting "scarring" effects on young people's behavior and attitudes (Barklamb 2001).

15.3.4 Pathways from the VET System into the Labor Market

Research has shown that firm-based and occupation-specific VET systems like that in Germany produce less turbulence in the school-to-work transition than systems that focus on general education such as those in the United Kingdom and the United States (Allmendinger 1989; Buchmann 2002). In times of recession, delayed entries occur more frequently in Germany as well because firms increasingly choose not to offer their trainees continued employment after their apprenticeship (Dietrich and Gerner 2007). Likewise, transitions to the labor market might include firm and even occupational changes, overeducation, and unemployment. NEPS data from Stage 6 mirror

smooth transitions as well as rather rough labor market entry histories of young people (Konietzka 2002; Seibert and Wydra-Somaggio 2017). In addition, some research literature suggests that a strong work ethic, ICT competencies, and so-called soft skills or personal styles should play an accentuated role in recruitment in times of high job competition (see, for the role of psychological factors, e.g., Diewald 2006), technological progress, and a growing service sector industry (see also Buchmann 2002; Murnane and Levy 1996). NEPS provides outstanding opportunities to investigate this assumed accentuation and its underlying processes in much more detail than ever before by taking advantage of the large regional and occupational differences in labor market competition within Germany and the manifold sources of information on educational and VET performance, noncognitive characteristics, and young adults' social environment factors.

As with VET placement, initial job placement and post-VET unemployment risks should result from the interplay of supply- and demand-side factors; or, in other words, from individuals' application behavior, gatekeepers' recruitment decisions, and structural labor market conditions. VET certificates are of crucial importance for both employers' recruitment decisions and young adults' job search because of German *credentialism* and the strong link between the VET system and the labor market (Blossfeld 1989; Solga and Konietzka 1999). Accordingly, recent research has shown that the training occupation highly structures the transition from VET to the labor market (Buchs et al. 2015; Menze 2017). This is why in Germany, school certificates used to have less influence on job placements than VET certificates. However, at least in public debates, employers seem to be increasingly demanding multiskilled "knowledge workers" who possess good vocational skills *and* general competencies (such as mathematical literacy, reading literacy, ICT literacy, and language skills) supplemented with problem-solving competencies and interpersonal and teamwork skills (Murnane and Levy 1996). However, it is still unknown why and to what extent cognitive and noncognitive competencies and school and VET certificates determine initial labor market placement. Some studies show that the effects of one's abilities differ by job complexity: the higher the complexity of jobs, the higher the influence of general cognitive abilities (the so-called "g factor") on occupational success (Gottfredson 1986). On the other hand, research by Schoon and Parsons (2002) has revealed that the importance of educational credentials for occupational attainment varies by economic and labor market conditions. This suggests that the relative influence of individuals' abilities and their educational certificates might depend on individuals' labor market context. The (absolute and relative) effect of cognitive competencies (such as reading or mathematical literacy) on individuals' first job placement is still entirely unknown for the German labor market. For Switzerland, the TREE project provides mixed evidence on the impact of cognitive competencies on job placement over and above VET certificates (Buchs et al. 2015; Müller and Schweri 2015). With the NEPS data, we are able to investigate the influence and (inter)relationship of school and VET certificates, educational biographies, cognitive and noncognitive competencies, and structural factors on patterns and outcomes of youth's labor market placements (see Chap. 8, this volume).

Finally, it should be added that NEPS provides excellent opportunities to study migrant youths' transition pathways and their outcomes, especially those of Turks and ethnic German youth who have emigrated from Eastern Europe (see Chap. 7, this volume). Research has found that young migrants—especially male Turks—have poorer labor market opportunities after having successfully completed regular VET program(s) than native German apprentices (Damelang and Haas 2006; Seibert and Solga 2005). They face higher risks of unemployment after leaving VET and, if employed, of entering only unskilled jobs. The explanations given by different researchers to account for this inequality are controversial. Some stress employers' discrimination based on an ethnically biased signaling value of VET certificates (Seibert 2005; Seibert and Solga 2005). Others, such as Kalter (2006), emphasize poorer job search resources, poorer human capital, and Turks' limited "social assimilation." There are good reasons to believe that supply- as well as demand-side factors are at work in producing these ethnic differences. NEPS provides for the first time data that allow us to simultaneously investigate the influence of demand-side and supply-side factors.

15.4 Concluding Remarks

The chapter has outlined some important research potentials of the longitudinal NEPS data in the area of transitions from school to work and the German VET system. The opportunity to study the interplay of demand- and supply-side factors in explaining intraindividual plasticity in educational and occupational decisions as well as interindividual differences in successful and unsuccessful transitions is a particular strength of the NEPS data. This potential is further increased when considering the interrelations of NEPS Stage 6 with Stage 5 (on participation in the Gymnasium, see Chap. 14, this

volume), Stage 7 (on university attendance, see Chap. 16, this volume), and Stage 8 (on further education and work histories, see Chap. 17, this volume). Due to space limitations, we can only sketch a few of the interesting research issues here. In connection with Stage 5, we are able to investigate differences in competence acquisition and transition patterns among youth holding an upper secondary school degree awarded by a *Gymnasium* or other school type (such as vocational school or evening classes). Concerning Stage 7, the replacement of traditional German university programs and degrees (i.e., *Diplom* and *Magister*) with 3-year bachelor's and 2-year master's programs and certificates at universities and universities of applied sciences may well impact on the VET system in the near future. These two sectors may increasingly compete directly with one another—not only in terms of student recruitment but also in terms of graduates' labor market opportunities (e.g., in commercial or technical occupations). And we witness the establishment of hybrid educational models combining VET and tertiary education. We are able to analyze whether these changes in tertiary education influence young people's decisions to participate in either VET or tertiary education, if and how these decisions differ by social groups, and what this means in terms

of educational and social inequality. The NEPS participants in Starting Cohorts 4 and 3 receive stage-specific questionnaires depending on their current educational status. These questionnaires are designed specifically to allow for cohort-wide analyses. Finally with regard to Stage 8, we provide manifold educational measurements for the school-to-work transition period, measurements that can be used in causal analyses of interindividual differences in participation in further adult education, occupational success in later life, and patterns of employment careers. Moreover, we are able to compare the relationships of different supply-side and demand-side factors and their group-specific impact on VET and later job placement processes. All of this could help us understand the underlying social mechanisms that produce different outcomes in terms of VET and labor-market placement—and eventually enable us to support policy interventions on an empirically sound base.

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